

CLAIMS

1. Method, comprising the steps of:
determining that a radio uplink channel power fluctuation exists, and
changing a spreading factor used for uplink channel spreading to counteract said power fluctuation.
2. The method of claim 1, wherein said change in spreading factor is an increase due to said channel power fluctuation determined as comprising a decreasing power fluctuation.
3. The method of claim 1, wherein said change in spreading factor is a decrease due to said channel power fluctuation determined as comprising an increasing power fluctuation.
4. The method of claim 1, wherein said step of determining is carried out in a radio network and wherein said method further comprises the step of sending a spreading factor control signal from said network to a mobile station followed by said mobile station carrying out said step of changing said spreading factor.
5. The method of claim 4, wherein said step of changing is carried out by said mobile station only if said mobile station independently determines that said step of changing the spreading factor is permissible.
6. The method of claim 4, further comprising the step of sending a transmit power control (TPC) signal from said network to said mobile station and wherein said step of determining comprises the step of counting instances of said TPC signal at said network and carrying out said step of determining by determining at said network if a count of said instances exceeds a selected number.
7. The method of claim 6, wherein said selected number is adaptable.
8. The method of claim 6, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.

9. The method of claim 8, wherein said selected plurality of TPC signal instances comprising said window is adaptable.

10. The method of claim 1, wherein said step of determining further comprises the step of determining a frame or block error rate of said radio uplink channel and wherein said step of changing the spreading factor is carried out only if said frame or block error rate meets a selected criterion.

11. The method of claim 1, wherein said step of determining comprises the step of detecting in a radio network said radio uplink channel power fluctuation in said radio uplink channel from a mobile station to said network, and wherein said method further comprises the step of transmitting a transmit power control (TPC) signal from said network to said mobile station commanding a change in transmit power to counteract said power fluctuation.

12. The method of claim 11, wherein said step of determining comprises the step of counting instances of said TPC signal at said network or at said mobile station and carrying out said step of determining by determining at said network or at said mobile station if a count of said instances exceeds a selected number followed by said mobile station carrying out said step of changing said transmit power in response to a command signal from said network or in response to said count at said mobile station exceeding said selected number.

13. The method of claim 12, wherein said selected number is adaptable.

14. The method of claim 12, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.

15. The method of claim 14, wherein said selected plurality of TPC signal instances comprising said window is adaptable.

16. The method of claim 12, wherein said step of determining further comprises the step of determining a frame or block error rate of said radio uplink channel and

wherein said step of changing the spreading factor is carried out only if said frame or block error rate meets a selected criterion.

17. The method of claim 12, wherein said step of changing is carried out by said mobile station only if said mobile station independently determines that said step of changing the spreading factor is permissible.

18. The method of claim 11, further comprising the step of counting, at the mobile station, instances of said TPC signal and wherein said step of determining comprises the step of determining at said mobile station if a count of said instances exceeds a selected number.

19. The method of claim 18, wherein said selected number is adaptable.

20. The method of claim 18, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.

21. The method of claim 20, wherein said selected plurality of TPC signal instances comprising said window is adaptable.

22. The method of claim 18, wherein said step of determining further comprises the step of determining a frame or block error rate of said radio uplink channel and wherein said step of changing the spreading factor is carried out only if said frame or block error rate meets a selected criterion.

23. The method of claim 1, wherein said step of determining is carried out in a mobile station.

24. The method of claim 23, further comprising the step of counting, at the mobile station, instances of a transmit power control (TPC) signal received from a radio network and wherein said step of determining comprises the step of determining at said mobile station if a count of said instances exceeds a selected number.

25. The method of claim 24, wherein said selected number is adaptable.

26. The method of claim 24, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.

27. The method of claim 26, wherein said selected plurality of TPC signal instances comprising said window is adaptable.

28. The method of claim 24, wherein said step of determining further comprises the step of determining a frame or block error rate of said radio uplink channel and wherein said step of changing the spreading factor is carried out only if said frame or block error rate meets a selected criterion.

29. Apparatus, comprising:

means for determining that a radio uplink channel power fluctuation exists,
and

means for changing a spreading factor used for uplink channel spreading to counteract said power fluctuation.

30. The apparatus of claim 29, wherein said change in spreading factor is an increase due to said channel power fluctuation determined as comprising a decreasing power fluctuation.

31. The apparatus of claim 29, wherein said change in spreading factor is a decrease due to said channel power fluctuation determined as comprising an increasing power fluctuation.

32. The apparatus of claim 29, wherein means for determining is located in a radio network and wherein said apparatus further comprises means for sending a spreading factor control signal from said network to a mobile station to means (88) for deciding a change in spreading factor.

33. The apparatus of claim 32, wherein said change is carried out by said mobile station only if said means for deciding independently determines that said change in the spreading factor is permissible.

34. The apparatus of claim 32, further comprising means for sending a transmit power control (TPC) signal from said network to said mobile station and wherein said means for determining comprises means for counting instances of said TPC signal at said network and means for deciding at said network if a count of said instances exceeds a selected number.

35. The apparatus of claim 34, wherein said selected number is adaptable.

36. The apparatus of claim 34, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.

37. The apparatus of claim 36, wherein said selected plurality of TPC signal instances comprising said window is adaptable.

38. The apparatus of claim 29, wherein said step of determining further comprises means for determining a frame or block error rate of said radio uplink channel and wherein said means for changing the spreading factor changes the spreading factor only if said frame or block error rate meets a selected criterion.

39. The apparatus of claim 29, wherein said means for determining comprises means for detecting in a radio network said radio uplink channel power fluctuation in said radio uplink channel from a mobile station to said network, and wherein said apparatus further comprises means for transmitting a transmit power control (TPC) signal from said network to said mobile station commanding a change in transmit power to counteract said power fluctuation.

40. The apparatus of claim 39, wherein said means for determining comprises means for counting instances of said TPC signal at said network or at said mobile station and means for determining at said network or at said mobile station if a count of said instances exceeds a selected number followed by said mobile station changing said transmit power in response to a command signal from said network or in response to said count at said mobile station exceeding said selected number.

41. The apparatus of claim 40, wherein said selected number is adaptable.
42. The apparatus of claim 40, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.
43. The apparatus of claim 42, wherein said selected plurality of TPC signal instances comprising said window is adaptable.
44. The apparatus of claim 40, wherein said means for determining further comprises means for determining a frame or block error rate of said radio uplink channel and wherein said means for changing the spreading factor changes the spreading factor only if said frame or block error rate meets a selected criterion.
45. The apparatus of claim 40, wherein said means for changing is carried out by said mobile station only if said mobile station independently determines that said changing the spreading factor is permissible.
46. The apparatus of claim 39, further comprising means for counting, at the mobile station, instances of said TPC signal and wherein said means for determining comprises means for determining at said mobile station if a count of said instances exceeds a selected number.
47. The apparatus of claim 46, wherein said selected number is adaptable.
48. The apparatus of claim 46, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.
49. The apparatus of claim 48, wherein said selected plurality of TPC signal instances comprising said window is adaptable.
50. The apparatus of claim 46, wherein said means for determining further comprises means for determining a frame or block error rate of said radio uplink channel and wherein said means for changing the spreading factor changes the spreading factor only if said frame or block error rate meets a selected criterion.

51. The apparatus of claim 29, wherein said means for determining is located in a mobile station.

52. The apparatus of claim 51, further comprising means for counting, at the mobile station, instances of a transmit power control (TPC) signal received from a radio network and wherein said means for determining comprises means for determining at said mobile station if a count of said instances exceeds a selected number.

53. The apparatus of claim 52, wherein said selected number is adaptable.

54. The apparatus of claim 52, wherein said selected number is adaptable within a window comprising a selected plurality of TPC signal instances.

55. The apparatus of claim 54, wherein said selected plurality of TPC signal instances comprising said window is adaptable.

56. The apparatus of claim 52, wherein said means for determining further comprises the means for determining a frame or block error rate of said radio uplink channel and wherein said means for changing the spreading factor changes the spreading factor only if said frame or block error rate meets a selected criterion.